

**Amendment and Response**

Applicant: Gottfried Beer et al.

Filed: March 10, 2004

Serial No.: 10/797,365

Docket No.: I431.104.101/FIN 429 US

Title: MODULE HAVING A CIRCUIT CARRIER AND AN ELECTRO-OPTICAL TRANSDUCER AND METHOD FOR PRODUCING THE SAME

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**REMARKS**

The following remarks are made in response to the Office Action mailed October 31, 2005. Claims 1-20 were rejected. With this Response, claims 1, 14, 15 and 19 have been amended. Claims 1-20 remain pending in the application and are presented for reconsideration and allowance.

**Claim Objection**

The Examiner objected to claim 14 because of an informality. The claimed "radiation guide holder" has no antecedent basis in the base claim 1. Applicants have now amended claim 14 to correct this informality, replacing "radiation guide holder" with "waveguide holder," which is consistent with claim 1. Applicants now believe claim 14 is in condition for allowance

**Claim Rejections under 35 U.S.C. § 102**

The Examiner rejected claims 1-20 under 35 U.S.C. 102(e) as being anticipated by the Pommer et al. U.S. Publication No. 2003/0201462.

Amended claim 1 specifies a module having an electro-optical transducer mounted on a circuit carrier. The electro-optical transducer includes an optical waveguide and an optoelectronic component. The optical waveguide holder has an optical waveguide receptacle and a mounting area on an edge side of the optical waveguide holder. The optoelectronic component has an optically active region on an active top side of a semiconductor chip, and a housing with a housing outer edge side, on which is arranged at least one contact area for electrically connecting the semiconductor chip to the circuit carrier. The optoelectronic component is arranged with its optically active region on the end side of the optical waveguide holder in such a way that the optical waveguide receptacle and the optically active region are oriented facing one another. The mounting area is arranged essentially at right angles with respect to the end side on the circuit carrier. The end side of the optical waveguide holder is mounted essentially at right angles with respect to the top side of the circuit carrier. The at least

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one contact area of the optoelectronic component is oriented facing the top side of the circuit carrier.

As is now clarified in amended claim 1, the module includes an optoelectronic component in which the contact areas are arranged on a housing outer edge and in which an end side of the optical waveguide holder and the mounting area are arranged essentially at right angles with respect to each other. Support for the clarifying amendments can be found on page 9, lines 19-20, page 9, lines 27 to page 10, line 2 and page 10, lines 15-19 of the specification as well as in the figures. This is not taught or suggested by Pommer or the art of record.

Instead, the Pommer reference teaches in paragraphs 199, 200, and 201, for example, the advantages of the use of a flexible printed circuit board or interposer positioned between the optoelectronic device and the mounting system. Such a system is shown in Figure 5C of the Pommer reference for example.

As such, there is no teaching or suggestion to omit the desirable interposer of the Pommer reference and no teaching or suggestion to provide a mounting area on the waveguide holder. Furthermore, the Pommer reference provides no reason for the skilled person to provide a mounting area which is arranged essentially at right angles to the end side of the waveguide holder.

The Pommer reference teaches in paragraph 13 that contact areas are arranged on the top side or may be provided on the bottom side. However, the Pommer reference teaches that contact areas are preferably provided on the top side of the optoelectronic component. The Pommer reference, therefore, teaches away from the provision of contact areas on the edge side of the housing. The Pommer reference, therefore, provides no teaching or suggestion for the skilled person to provide the contact areas on the edge side of the optoelectronic component.

The Pommer reference, therefore, provides the skilled person with no teaching or suggestion to modify the module so as to mount the waveguide holder and the optoelectronic component directly on the circuit carrier. There is also no teaching or suggestion to provide a mounting area essentially at right angles to the end piece of the waveguide holder and contact areas on the edge side of the optoelectronic component. Furthermore, it is not obvious that such

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an arrangement could lead to a module which can be handled with a higher security against damage.

Amended claim 1 provides a module in which the optical waveguide holder has a mounting area which is arranged essentially right angles to the end side. When the optical waveguide holder is mounted on the circuit carrier, the end side is therefore positioned essentially at right angles with respect to the top side of the circuit carrier. As such, a module is provided that can be handled with a higher security against damage. Specifically, this arrangement does not require additional adapters, the mounting of the waveguide holder on the circuit carrier is simplified, and the height of the module is reduced.

Amended claim 1 provides a module that includes an optoelectronic component in which the contact areas for electrically connecting the semiconductor chip to the circuit carrier are arranged on a housing outer side edge. Such an arrangement of the contact area affords that when the optoelectronic component is arranged with its optically active region facing the end side of the optical waveguide holder, the contact areas of the optoelectronic component face the top side of the circuit carrier and are connected to circuit lines positioned on the top surface of the circuit carrier by solder connections. Consequently, the electrical connection between the optoelectronic component and the circuit carrier is simplified. Further connection elements, such as bond wires or pins, are not required as the electrical connection to the circuit carrier can be produced by simple solder connections.

The mounting arrangement of the waveguide holder and the contact areas of the optoelectronic component directly on the circuit carrier provides a module which is less susceptible to damage during handling and which has a reduced height.

For all the above-cited reasons, amended independent claim 1 is neither taught nor suggested by Pommer or by any of the art of record. Furthermore, independent claims 15 and 19 have been amended to also specify the relationship wherein the end side of the optical waveguide holder and the mounting area are arranged essentially at right angles with respect to each other. As such, for the same reasons detailed for claim 1, claims 15 and 19 are also allowable over the

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art of record. Since dependent claims 2-14, 16-18 and 20 depend from these now-allowable claims, they too are in condition for allowance.

Therefore, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 102(e) rejection to claims 1-20, and request allowance of these claims.

**CONCLUSION**

In view of the above, Applicant respectfully submits that pending claims 1-20 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-20 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

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Any inquiry regarding this Amendment and Response should be directed Paul P. Kempf at Telephone No. (612) 767-2502, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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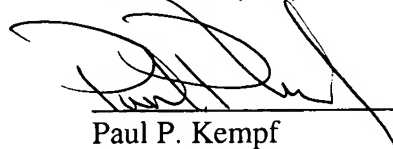
Respectfully submitted,

Gottfried Beer et al.,

By their attorneys,

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**CERTIFICATE UNDER 37 C.F.R. 1.8:** The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 31<sup>st</sup> day of January, 2006.

By   
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Name: Paul P. Kempf